

CLAIMS

1. A method of producing a ceramic multi-layer substrate including:

5 a step of preparing a composite laminate comprising an unfired ceramic laminate formed by lamination of a plurality of substrate ceramic green sheets, and a shrink-prevention ceramic green sheet arranged on at least one of the main surfaces of the unfired ceramic laminate and being
10 substantially incapable of being sintered at the firing temperature of the unfired ceramic laminate;

a step of firing the composite laminate at a temperature at which the unfired ceramic laminate can be fired and which is lower than the sintering temperature of
15 the shrink-prevention ceramic green sheet; and

a step of removing the shrink-prevention ceramic green sheet subjected to the firing step, from the fired composite laminate; characterized in that

the step of removing the shrink-prevention ceramic
20 green sheet contains;

a first removing step of spraying a liquid material and compressed gas against the shrink-prevention ceramic green sheet on the main surface of the composite laminate subjected to the firing step, and

25 a second removing step of spraying ceramic powder, a

liquid material, and compressed gas against the main surface of the ceramic multilayer substrate subjected to the first removing step.

5 2. The method of producing a ceramic multi-layer substrate according to Claim 1, characterized in that the step of removing the shrink-prevention ceramic green sheet further contains a third removing step of supersonic-cleaning the ceramic multilayer substrate subjected to the first and
10 second removing steps.

3. The method of producing a ceramic multi-layer substrate according to Claim 1, characterized in that the step of removing the shrink-prevention ceramic green sheet further
15 contains a third removing step of spraying a liquid material and compressed gas against the main surface of the ceramic multi-layer substrate subjected to the first and second removing steps.

20 4. The method of producing a ceramic multi-layer substrate according to any one of Claims 1 to 3, characterized in that the pressure of the compressed gas in the first removing step is in the range of 147 to 539 kPa, and the pressure of the compressed gas in the second removing step is in the
25 range of 98 to 343 kPa.

5. The method of producing a ceramic multi-layer substrate according to any one of Claims 1 to 3, characterized in that the average particle size of the ceramic powder in the
5 second removing step is in the range of 9.5 to 40 μm .

6. The method of producing a ceramic multi-layer substrate according to Claim 2, characterized in that in the third removing step, the ceramic multi-layer substrate is
10 supersonic-cleaned under the conditions of a frequency of 40 to 100 kHz and an output of 0.2 to 2.0 W/cm².

7. The method of producing a ceramic multi-layer substrate according to Claim 3, characterized in that the gas of the
15 compressed air in the third removing step is in the range of 147 to 539 kPa.